



The impact of light intensity and strain on behaviour and welfare of egg-strain pullets reared in perchery systems from 0 to 16 weeks of age

PURPOSE OF STUDY

In Canada, laying hens are required to be housed in alternative housing systems by 2036. Alternative housing such as enriched cages and non-cage systems provide more space, resources, and freedom for hens to express more natural behaviours. For these housing systems to be utilized to their fullest potential, the birds must be able to see well so they can navigate their environment successfully. One method to support this is by manipulating light intensity to help with vision. Currently, the Canadian Codes of Practice requires light intensity of minimum 10 lux for birds reared in alternative housing, but we wonder whether brighter lighting can help with navigating a complex environment.

The purpose of this research was to determine the impact of light intensity on behaviour, navigation, and welfare of egg-strain birds during the pullet phase.



WHAT WE DID

Three light intensities (10, 30, or 50 lux, provided by white LED lights) were randomly assigned to light tight rooms. 1,800 Lohmann Brown-Lite and 1,800 Lohmann LSL-Lite pullets were floor reared in pens within the rooms from 0 to 16 weeks of age. Each pen contained a system of four parallel perches, ramp, drinker line, and two tube feeders. Data collection included behavioural expression, jumping frequency and success, fear, and stress response.



WHAT WE FOUND

Behaviour

At eight weeks of age, pullets reared under 50 lux walked (active behaviour) more than pullets reared under 10 lux. At 13 and 16 weeks of age, pullets under 50 lux performed more preening (comfort behaviour) than those under 10 lux. On the other hand, 10 lux pullets pecked at walls (exploratory behaviour) more than 50 lux pullets.



Jumping frequency

At four weeks of age, pullets reared under 50 lux jumped upwards from the floor to the top half of the ramp more than 10 lux pullets. Pullets reared under 30 lux jumped between perches more than 10 lux pullets. Even though pullets reared under 10 lux did not perform as many jumps as pullets in the other treatments, there was no difference in landing success.

Fear and stress response

There was no difference in fear or stress responses between light intensity treatments.

Strain differences

Lohmann Brown-Lite pullets spent more time litter pecking (exploratory behaviour) and scored higher on the fear and stress assessments. Lohmann LSL-Lite pullets spent more time preening (comfort behaviour) and resting (inactive behaviour). Lohmann LSL-Lite pullets also performed more jumps between resources in their environment than Lohmann Brown-Lite pullets.

CONCLUSIONS

The results indicate that pullets reared under 10 lux can navigate their environment successfully and safely. If light intensity were increased to 30 or 50 lux, fear and stress levels within the flock would not increase. Rather, pullets would utilize environmental resources more and increase in jumps directed upwards and across perches, especially during early pullet life at four weeks of age. There was also a higher expression of comfort behaviours at 50 lux.

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